REMARKS

It is submitted that the invention as defined in amended independent claims 1, 10 and 18 would not be anticipated by the disclosure found in U.S. Patent No. 3,648,088 to Wilkin et al. (hereinafter "Wilkin"), the only reference applied by the Examiner. Wilkin was cited as a reference in the Information Disclosure Statement filed on January 21, 2004 as the first in a list of 15 references. Although an initialed copy of the list was not attached to the Office Action, it is presumed that this reference list, in its electronic form, indeed reached the Examiner.

The independent claims have now been amended so as to expressly recite the unexpected advantage that results from the negative charging of the brushes, compared to positively charged brushes in exactly the same situation (as recited in the description at page 2, lines 26-29). Whereas, Wilkin does show a homopolar motor wherein the brushes might be either positively charged or negatively charged, Wilkin contains absolutely no indication that such an unexpected advantage would result from negative polarity as opposed to positive polarity, i.e., a decrease in brush wear by over an order of magnitude.

Enclosed is a declaration signed by the first-named inventor, which points out that, in a carefully controlled experimental test performed under his supervision, the measured amount of brush wear for negatively charged brushes was more than 10 times less than the comparable wear experienced by positively charged brushes, with all other aspects being equal.

It is submitted that this result (which was surprising to the joint inventors of this application) is certainly not something would be expected from the teaching of Wilkin who advocates only that the direction of current flow be the same in each current transfer device, and follows this statement by immediately stating, in the paragraph at column 2, lines 43-46:

> "In an alternative arrangement the direction of current flow is reversed but again the direction of flow is the same in both current transfer devices. The arrangement is applicable to machines acting as motors or generators."

Thus, the reading of the entire Wilkin disclosure shows merely a teaching that current flow should be in the same direction at both transfer stations; however, there is clearly no recognition of the dramatic and unexpected reduction in brush wear that is a consequence of maintaining all the brushes at negative plurality. As recited in Applicant's specification: "This surprising increase in longevity appears to be the result of the avoidance of electron bombardment on the brushes which is a result of operating the homopolar machine with both sets of brushes negatively charged, a result that was never previously appreciated in this art."

Moreover, Wilkin was published over 30 years ago and has been available as a reference for that long period of time; however, nowhere during that 30 plus year period is there any recognition noted that, in a homopolar motor, brush wear can be decreased by more than an order of magnitude as a result of negative polarity. Wilkin merely describes this as an either/or situation, with no preference, and a reading of Wilkin in no way suggests any improvement, particularly one of this magnitude.

It is submitted that Applicants' surprising discovery is one deserving of patent protection, and it is submitted that, upon reconsideration, the rejection on the basis of the disclosure of Wilkin should be withdrawn and claims 1 - 18 should be held to be allowable. In the 32 years that have passed since the publication of the Wilkin patent, there has been no recognition that negative polarity (as opposed to positive polarity) would have such a dramatic effect in decreasing brush wear.

In addition to the foregoing, it is pointed out that dependent claims 14, 15 and 16 recite details of the brush holders (that are illustrated in FIGs. 7, 8 and 9) wherein a radially aligned stem having two opposed parallel surfaces is disposed between a pair of parallel of flat plates and wherein the brushes are carried by slidable components which are electrically connected (via a stack of generally parallel, conductive metal ribbons) to these opposed parallel surfaces of the fixed component. As pointed out at page 10, lines 27 et seq. of the specification, this particular design holder has been found to exhibit improved properties in situations where magnetic forces are extremely high and would otherwise tend to cause brushes to twist or otherwise be displaced. It is submitted that this extremely stable arrangement of juxtaposed flat surfaces of substantial relative surface area effectively counteracts such adverse magnetic effects and is a concept that is clearly absent from the

schematic representations found in Wilkin. Claims 14-16 are further allowable for this reason.

In view of the foregoing amendments and remarks, it is believed that, in the absence of more pertinent prior art recognizing that negative polarity can so dramatically reduce brush wear, claims 1-18 should be allowed. The issuance of a notice of allowance is now believed to be in order, and favorable action is courteously solicited.

Respectfully submitted,

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